

REMARKS

Claims 1-3, 8, 11-12, 16, 19, and 20 are pending. Claims 4-7, 13-15, 21 and 22 are cancelled. Applicants respectfully request reexamination and reconsideration of the pending claims.

In the November 11, 2004 office action, it was noted that "Applicant discusses features of the invention which are not claimed (i.e., the beamshaper turning an elliptical beam into a circular beam to equalize power in both the major and minor axis directions). In response, Applicant has amended the beamfeature of claims 1, 8, and 16 to reflect what a beamshaper does: it "changes an ellipticity of a light beam transmitted by the light source along the optical path." In that regard, Applicants note that they are simply making explicit what was implicit in these claims: a beamshaper, in the optical disk arts, is not something that merely "shapes a beam," but instead changes the ellipticity of the beam.

Consider the features recited in claim 1. As discussed, for example, in the background section of the application, Applicants note the problems with respect to modifying components in the optical path in modern optical read/write systems. Should one component be changed, other elements in the optical path may also need to be modified because the complex interactions between components. In particular, suppose a designer is not sure whether a beamshaper should be included in a given design. To continue with the design and keep the beamshaper option open, two completely different optical paths would need to be designed: one with a beamshaper and one without. The present invention obviates the need for such a costly approach. Instead, only one design path is needed because the beamshaper will be configured such that the virtual source point for the laser-generated optical beam is the substantially the same whether or not a beamshaper is in the beam path. For example, consider Figures 28a and 28b. In Figure 28a, no beamshaper is included within the optical path such that the virtual source point for the beam is shown as point 2822. In Figure 28b, a beamshaper 2826 is included in the optical path yet the virtual source point 2822 is still the same. Accordingly, a designer could design for the inclusion of beamshaper 2826 as an option; an option that could be exercised without incurring the cost of an entirely separate design as discussed with respect to the prior art.

Such an advantageous result is reflected in claim 1, which recites the act of "providing at least a first beamshaper in said optical path wherein a farthest virtual source point of said optical path after said first beamshaper is provided is substantially the same as said farthest virtual source point before said first beamshaper is provided, and wherein the beamshaper

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changes an ellipticity of a light beam transmitted by the light source along the optical path." The cited prior art stands in sharp contrast. For example, consider the Kim reference (USP 5,995,476). Element 14 is a grating and thus typically will only split the beam from the laser; it does not perform a beam shaping function. In the read/write optical arts, a beam shaping function is often desirable because the beam from a typical laser source is elliptical whereas a circular beam may be preferred. In the case of an elliptical beam, to get adequate power in the direction of the minor axis of the ellipse, the power is of course substantially greater in the direction of the major axis. This wastes power in that the major axis power is greater than it needs to be. Thus, if the major axis can be shortened, power may be equalized in both the major and minor axis directions, thereby preventing any excess power problem. Alternatively, the minor axis could be lengthened.

Regardless of how a beamshaping is performed with respect to the major and minor axes of the ellipse, a single diffraction grating cannot perform this task. Moreover, note that a single optical element cannot both beam shape and leave the virtual source point unchanged. In other words, a single element may bend rays to perform beamshaping but now the source point has to be changed because of this bending. Thus, element 14 fails on two grounds: 1) it cannot beam shape and hence be the claimed "beamshaper," and 2) it cannot leave the virtual source point substantially the same. Accordingly, claim 1 is patentable over the Kim reference.

The Lee reference (USP 6,359,845) adds nothing further. As seen in Figure 7, Lee discloses an optical pickup apparatus that may be used to read DVDs (18a) or CDs (18b). To read the DVDs, a first hologram unit 10 is used whereas to read the CDs, a second hologram unit 20 is used. Both hologram units use the same objective lens 16. Because these hologram units have different virtual source points, they pass through collimator lens 14. As known in the arts, a collimator is a device that renders divergent or convergent rays nearly parallel. Thus, hologram units 10 and 20 may then use the same objective lens 16. But note: a collimator is not a beam shaper: it does not take an elliptical beam into a circular shape. Moreover, with respect to either hologram unit, the virtual source point is absolutely changed: as stated above, a single element cannot both beam shape and leave the source point unchanged. Here, collimator 14 plainly bends the rays for both units 10 and 20. Once you have bent the rays at a single point, the source point has now changed. Accordingly, collimator 14 fails on two grounds: 1) it cannot beam shape and hence be the claimed "beamshaper," and 2) it

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cannot leave the virtual source point substantially the same. Accordingly, claim 1 is patentable over the Lee reference, alone or in combination with Kim.

Because claims 2 through 3 depend upon claim 1, they are patentable over Kim and Lee for at least the same reasons.

Claim 8 has been amended to more particularly point out and distinctly claim the invention. No new matter has been added. Claim 8 is also patentable over Kim and Lee for analogous reasons: neither reference suggests or teaches the limitation of a "beamshaper in said optical path, wherein a virtual source point of said optical path when said beamshaper is provided is substantially the same as said virtual source point before said second optical element is provided."

Because claims 11 and 12 depend upon claim 8, they are patentable over the Kim and Lee references for at least the same reasons.

Claim 16 has been amended to more particularly point out and distinctly claim the invention. No new matter has been added. Claim 16 is also patentable over Kim and Lee for analogous reasons: neither reference suggests or teaches the limitation of a "a beamshaper for modifying said light, said beamshaper positioned in said optical path, wherein a value of a virtual source point of said optical path when said beamshaper is provided is substantially the same as a value of said virtual source point before said beamshaper is provided."

Because claims 19 and 20 depend upon claim 16, they are patentable over Kim and Lee for at least the same reasons.

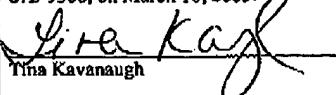
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CONCLUSION

For the above reasons, pending Claims 1-3, 8, 11-12, 16, 19 and 20 are in condition for allowance and allowance of the application is hereby solicited. If the Examiner has any questions or concerns, a telephone call to the undersigned at (949) 752-7040 is welcomed and encouraged.

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